In [ ]:
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# Assignment-4 While Loop in Python
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In [10]:
```
# 1. Write a program to generate all possible multiples of a number provided by the
# user.

num = int(input("Enter a number to generate its multiples: "))
limit = int(input("Enter how many multiples you want: "))
i = 1
print(f"\nMultiples of {num} up to {limit} times:\n")
while i <= limit:
    multiple = num * i
    print(f"{num} x {i} = {multiple}")
    i += 1
```

```
Multiples of 5 up to 10 times:

5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```

In [14]:
```
# 2. Write a program to calculate the factorial of a number provided by the user.

num = int(input("Enter a number to calculate its factorial: "))
factorial = 1
i = 1
while i <= num:
    factorial *= i
    i += 1
print(f"\nFactorial of {num} is: {factorial}")
```

```
Factorial of 4 is: 24
```

In [16]:
```
# 3. Write a program to display all odd and even numbers in the range between 10
# and 25.
num = 10
print("Even and Odd numbers between 10 and 25:\n")
while num <= 25:
    if num % 2 == 0:
        print(f"{num} is Even")
    else:
        print(f"{num} is Odd")
    num += 1
```

```
Even and Odd numbers between 10 and 25:

10 is Even
11 is Odd
12 is Even
13 is Odd
14 is Even
15 is Odd
16 is Even
17 is Odd
18 is Even
19 is Odd
20 is Even
21 is Odd
22 is Even
23 is Odd
24 is Even
25 is Odd
```

In [21]:
```python
# 4. Write a program to generate the multiplication table of a number provided by t
# user.
# The output should be in the format: 2 x 2 = 4 and so on.
num = int(input("Enter the number for which you want the multiplication table: "))
limit = int(input("Enter how far you want the table to go (e.g., 10): "))
i = 1
print(f"\nMultiplication Table of {num}:\n")
while i <= limit:
    print(f"{num} x {i} = {num * i}")
    i += 1
```

```
Multiplication Table of 2:

2 x 1 = 2
2 x 2 = 4
2 x 3 = 6
2 x 4 = 8
2 x 5 = 10
2 x 6 = 12
2 x 7 = 14
2 x 8 = 16
2 x 9 = 18
2 x 10 = 20
```

In [23]:
```python
# 5. Write a program to check whether a number provided by the user is a
# palindrome.
num = int(input("Enter a number to check if it's a palindrome: "))
original = num
reverse = 0
while num > 0:
    digit = num % 10
    reverse = reverse * 10 + digit
    num = num // 10
if original == reverse:
    print(f"\nYes, {original} is a palindrome.")
else:
    print(f"\nNo, {original} is not a palindrome.")
```

```
Yes, 121 is a palindrome.
```

In [27]:
```python
# 6. Write a program to generate the Fibonacci series up to a number provided by th
# user.
limit = int(input("Enter the upper limit for the Fibonacci series: "))
a, b = 0, 1
print(f"\nFibonacci series up to {limit}:\n")
while a <= limit:
    print(a, end=" ")
    a, b = b, a + b
```

```
Fibonacci series up to 70:

0 1 1 2 3 5 8 13 21 34 55
```

In [28]:
```python
# 7. Write a program to check whether a number provided by the user is prime.
num = int(input("Enter a number to check if it's prime: "))
if num <= 1:
    print(f"\n{num} is not a prime number.")
else:
    i = 2
    is_prime = True
    while i <= num // 2:
        if num % i == 0:
            is_prime = False
            break
        i += 1
    if is_prime:
        print(f"\nYes, {num} is a prime number.")
    else:
        print(f"\nNo, {num} is not a prime number.")
```

```
No, 15 is not a prime number.
```

In [30]:
```python
# 8. Write a program to generate the squares of the first 10 natural numbers.
# The output should be in the format: Square of 2: 4 and so on.
num = 1
print("Squares of the first 10 natural numbers:\n")
while num <= 10:
    square = num * num
    print(f"Square of {num}: {square}")
    num += 1
```

```
Squares of the first 10 natural numbers:

Square of 1: 1
Square of 2: 4
Square of 3: 9
Square of 4: 16
Square of 5: 25
Square of 6: 36
Square of 7: 49
Square of 8: 64
Square of 9: 81
Square of 10: 100
```

In [32]:
```
# 9. Write a program to calculate the sum of the digits of a number provided by the
# user.
num = int(input("Enter a number to calculate the sum of its digits: "))

digit_sum = 0
while num > 0:
    digit = num % 10         # Get last digit
    digit_sum += digit       # Add to sum
    num = num // 10          # Remove last digit
print(f"\nSum of digits: {digit_sum}")
```

```
Sum of digits: 21
```

In [38]:
```
# 10.Write a program to check whether a number provided by the user is a
# palindrome.
num = int(input("Enter a number to check if it's a palindrome: "))
original = num
reversed_num = 0
while num > 0:
    digit = num % 10
    reversed_num = reversed_num * 10 + digit
    num = num // 10
if original == reversed_num:
    print(f"\nYes, {original} is a palindrome.")
else:
    print(f"\nNo, {original} is not a palindrome.")
```

```
Yes, 121 is a palindrome.
```

In [39]:
```
# 11. Write a program that takes the starting and ending points of a range as input
# from the user, then calculates the sum of all numbers within that range.

start = int(input("Enter the starting number of the range: "))
end = int(input("Enter the ending number of the range: "))
total = 0
num = start
while num <= end:
    total += num
    num += 1
print(f"\nSum of numbers from {start} to {end} is: {total}")
```

```
Sum of numbers from 7 to 10 is: 34
```

In [40]:
```
# 12.Write a program that takes the starting and ending points of a range as input
# from the user, then calculates the product of all numbers within that range.
start = int(input("Enter the starting number of the range:"))
end = int(input("Enter the ending number of the range: "))
total = 0
num = start
while num <= end:
    total += num
    num += 1
print(f"\nSum of numbers from {start} to {end} is: {total}")
```

```
Sum of numbers from 3 to 9 is: 42
```

In [42]:
```
# 13.Write a program to find the greatest character in the string "python".
text = "python"
i = 1
greatest = text[0]
while i < len(text):
    if text[i] > greatest:
        greatest = text[i]
    i += 1
print(f"\nThe greatest character in '{text}' is: '{greatest}'")
```

```
The greatest character in 'python' is: 'y'
```

In [45]:
```
# 14.Write a program that allows the user to search for a character within the stri
# "Python is a programming language".

text = "Python is a programming language"

# Get character input from user
char = input("Enter a character to search for: ")
i = 0
found = False
while i < len(text):
    if text[i] == char:
        found = True
        break
    i += 1
if found:
    print(f"\nYes, '{char}' is found at position {i} in the string.")
else:
    print(f"\nNo, '{char}' is not found in the string.")
```

```
Yes, 'l' is found at position 24 in the string.
```

In [47]:
```
# 15.Write a program to filter out all vowels and consonants from a string provided
# the user.
text = input("Enter a string: ")
i = 0
vowels = ""
consonants = ""
vowel_set = "aeiouAEIOU"
while i < len(text):
    char = text[i]
    if char.isalpha():
        if char in vowel_set:
            vowels += char
        else:
            consonants += char
    i += 1
print(f"\nVowels in the string: {vowels}")
print(f"Consonants in the string: {consonants}")
```

```
Vowels in the string: aeiaaiaa
Consonants in the string: mynmsnndshrvstv
```

In [48]:
```
# 16.Write a program to filter out duplicate characters from a string provided by t
# user.
text = input("Enter a string: ")
```

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i = 0
result = ""
seen = ""
while i < len(text):
    char = text[i]
    if char not in seen:
        result += char
        seen += char
    i += 1
print(f"\nString after removing duplicates: {result}")
```

```
String after removing duplicates: python rgamie
```

In [49]:
```
# 17.Write a program to find the greatest character in the string "python".

text = "python"
i = 1
greatest = text[0]
while i < len(text):
    if text[i] > greatest:
        greatest = text[i]
    i += 1
print(f"\nThe greatest character in '{text}' is: '{greatest}'")
```

```
The greatest character in 'python' is: 'y'
```

In [51]:
```
# 18.Write a program to display all letters except 'm' and 'i' from the string
# "Dreamer Infotech".
text = "Dreamer Infotech"
i = 0
print("Filtered string (excluding 'm' and 'i'):\n")
while i < len(text):
    char = text[i]
    if char != 'm' and char != 'i':
        print(char, end="")
    i += 1
```

```
Filtered string (excluding 'm' and 'i'):

Dreaer Infotech
```

In [52]:
```
# 19.Write a program to print alternate characters of a string provided by the user
text = input("Enter a string: ")
i = 0
print("\nAlternate characters in the string:\n")
while i < len(text):
    print(text[i], end="")
    i += 2
```

```
Alternate characters in the string:

DemrIftc
```

In [53]:
```
# 20.Write a program to reverse a string provided by the user.

text = input("Enter a string to reverse: ")
i = len(text) - 1
reversed_text = ""
```

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while i >= 0:
    reversed_text += text[i]
    i -= 1
print(f"\nReversed string: {reversed_text}")
```

```
Reversed string: hcetofnI remaerD
```